Prerequisite:

For MEHU students, no prerequisites; for non-MEHU students, the e-mailed permission of the instructor, who can be reached at: dbdelanc–AT–utmb–DOT–edu.

Enrollment restrictions: Minimum 1, Maximum 12

Course Objectives:

Upon completion of this course, students should know, understand, and be able to use concrete examples to explain the following in appropriate historical and social context:

- The development, emergence, legacies, and antecedents of some landmark medical technologies.
- Medical technology's role within and/or impact upon:
  - the practice of medicine;
  - conduct of medical research;
  - production and revision of medical knowledge – including disease concepts;
  - medical professionals, professions, and institutions.
- Medical technology's impact upon the experience of the patient.
- Medical technology's relationships with industry.
- Medical technology's relationships with commercial markets.
- Significant theoretical and/or historiographic approaches to the study of medical technologies.
- Key controversies in the development and/or use of medical technologies.
- Medical technologies and bioethics, including questions of allocation, justice, and risk.
- Interactions between medical technologies and ethnicity, race, gender, class, and religion.
- The means of assessing the efficacy and value of medical technologies.

Week 1: THURSDAY, JANUARY 3, 2008
INTRODUCTIONS, HOUSEKEEPING ISSUES, SYLLABUS REVIEW

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Week 2: THURSDAY, JANUARY 10, 2008
THEORY AND BACKGROUND

Robert L. Heilbroner, "Do Machines Make History?," *Technology and Culture*, 8.2 (1967), 335-345.

Melvin Kranzberg, "Technology and History: 'Kranzberg's Laws'," *Technology and Culture*, 27.3 (1986), 544-560.

R. A. Buchanan, "Theory and Narrative in the History of Technology," *Technology and Culture*, 32.2 (1991), 365-376.

John Harley Warner, "Science in Medicine," *Osiris*, 2nd Series, Vol. 1, Historical Writing on American Science. (1985), pp. 37-58.

*****Trevor Pinch and Wiebe E. Bijker, "The Social Construction of Facts and Artifacts: Or how the Sociology of Science and the Sociology of Technology Might Benefit Each Other", in Wiebe E. Bijker, Thomas Hughes and Trevor Pinch, eds, *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, MA: MIT Press, 1987), 17-50.

*** *Many students find this highly-influential article tough going when they sit down to read it. Please: (1) simply read for the main idea of each section and then craft an outline of the article's argument and (2) feel free to simply* skim* the many diagrams and flowcharts in the article!***

Week 3: THURSDAY, JANUARY 17, 2008
THE STETHOSCOPE: The Disappearance of the 'Sick-Man'? Part One

Malcolm Nicolson, "The Art of Diagnosis: Medicine and the Five Senses," in W. F. Bynum and Roy Porter, eds., *Companion Encyclopedia of the History of Medicine*, *Volume 2* (London and New York: Routledge, 1993), 801-825.

Stanley Joel Reiser, *Medicine and the Reign of Technology* (Cambridge: Cambridge University Press, 1978), as follows:

- "Chapter 1: Examination of the Patient in the Seventeenth and Eighteenth Centuries," 1-22.
- "Chapter 2: The Stethoscope and the Detection of Pathology by Sound," 23-44.

Audrey B. Davis, "The Stethoscope," *Medicine and Its Technology: An Introduction to the History of Medical Instrumentation* (Westport, CT and London: Greenwood Press, 1981), 87-116.

*****Nicholas D. Jewson, "The Disappearance of the Sick-Man from Medical Cosmology, 1770-1870," *Sociology*, 10.2(1976), 225-244.

*** *Because the stethoscope and the microscope are the two central technologies in Jewson's argument, we will be reading his article in the stethoscope unit, then re-reading it for further discussion in the miscroscope unit!***

Week 4: THURSDAY, JANUARY 24, 2008
THE MICROSCOPE: The Disappearance of the 'Sick-Man'? Part Two

Reiser, "Chapter 4: The Microscope and the Revelation of a Cellular Universe," *Medicine and the Reign of Technology*, 69-90.

James H. Cassedy, "The Microscope in American Medical Science, 1840-1860," *Isis*, 67.1(1976), 76-97.

Deborah Jean Warner, "The Campaign for Medical Microscopy," *Bulletin of the History of Medicine*, 69(1995): 367-386.

C. Heitzman, "The Aid which Medical Diagnosis Receives from Recent Discoveries in Microscopy," *Archives of Medicine (New York)*, 1(1879): 44-67. Reprinted in: Howell, ed., *Technology and American Medical Practice* (New York and London: Garland, 1988, 33-40.

*****Nicholas D. Jewson, "The Disappearance of the Sick-Man from Medical Cosmology, 1770-1870," *Sociology*, 10.2(1976), 225-244.

**** Because the stethoscope and the microscope are the two central technologies in Jewson's argument, we will be reading his article in the stethoscope unit, then re-reading it for further discussion in the miscroscope unit!***

Week 5: THURSDAY, JANUARY 31, 2008
THE SPIROMETER & THE SPHYGMOMANOMETER: Measuring Physiology

Reiser, "Chapter 5: The Translation of Physiological Actions into the Languages of Machines," *Medicine and the Reign of Technology*, 91-121.

Alexander Rattray, "The Spirometer in Diagnosis," *Pacific Medical and Surgical Journal*, 22(1879-1880), 110-117. Reprinted in: Howell, ed., *Technology and American Medical Practice* (New York and London: Garland, 1988, 33-40.

Davis, "Concepts of the Pulse and Instruments," *Medicine and Its Technology* (Westport, CT and London: Greenwood Press, 1981), 87-116.

Lundy Braun, "Spirometry, Measurement, and Race in the Nineteenth Century," Journal of the History of Medicine and Allied Sciences, 60.2(2005), 135-169.

Hughes Evans, "Losing Touch: The Controversy over the Introduction of Blood Pressure Instruments into Medicine," *Technology and Culture*, Special Issue: Biomedical and Behavioral Technology, Vol. 34, No. 4,. (1993), 784-807.

Week 6: THURSDAY, FEBRUARY 7, 2008
NO CLASS

Week 7: THURSDAY, FEBRUARY 14, 2008
X-RAYS AND VISUAL TECHNOLOGIES: The Atomized or Transparent Patient

Reiser, "Chapter 3: Visual Technology and the Atomization of the Living," *Medicine and the Reign of Technology*, 45-68.

Bettyann Holzmann Kevles, *Naked to the Bone: Medical Imaging in the Twentieth Century* (New York: Basic Books, 1997), as follows:

- "Chapter 1, The Discovery of X-Rays: Seeing Is Believing," 9-32.
- "Chapter 2, Medical Applications: The Living Body beneath the Skin," 33-53.
- "Chapter 3, Technological Innovation 1897-1918: Building a Better Mousetrap," 54-76.
- "Chapter 4, Medical Politics between the Wars: Setting Standards," 77-96.
- "Chapter 5, Technological Innovation 1910-1918: Sharper, Clearer, Deeper," 97-115.

Ellen B. Koch, "In the Image of Science? Negotiating the Development of Diagnostic Ultrasound in the Cultures of Surgery and Radiology," *Technology and Culture*, Special Issue: Biomedical and Behavioral Technology, 34.4 (1993), 858-893.

Week 8: THURSDAY, FEBRUARY 21, 2008
DIAGNOSTIC LABORATORY TECHNOLOGY: Case Studies in Blood

Reiser, "Chapter 6: Chemical Signposts of Disease and the Birth of a Diagnostic Laboratory," *Medicine and the Reign of Technology*, 122-143.

Ross C. Whitman, "The Technique of Blood Examination," *The Chicago Medical Recorder* 26(1904): 24-37. Reprinted in: Howell, ed., *Technology and American Medical Practice* (New York and London: Garland, 1988, 33-40.

Keith Wailoo, *Drawing Blood: Technology and Disease Identity in Twentieth-Century* (1997; Baltimore: Johns Hopkins University Press, 1999), as follows:

- "Introduction: Putting the Question to Technology," 1-16.
- "Chapter 2, The Rise and Fall of Splenic Anemia: Surgical Identity and Ownership of a Blood Disease," 46-72.
- "Chapter 4, The Corporate 'Conquest' of Pernicious Anemia: Technology, Blood Researchers, and the Consumer," 99-133.
- "Chapter 5, Detecting 'Negro' Blood: Black and White Identities and the Reconstruction of Sickle Cell Anemia," 134-161.
- "Chapter 6, 'The Forces That Are Molding Us': The National Politics of Blood and Disease after World War II," 162-200.

*****ALERT! LITERATURE REVIEW ESSAY DUE AT START OF CLASS IN WEEK 9.*****

*****ALERT! LITERATURE REVIEW ESSAY DUE AT START OF CLASS IN WEEK 9.*****

Week 9: WEDNESDAY, FEBRUARY 27, 2008
HOSPITAL TECHNOLOGY: Technology in Hospitals, Hospitals as Technology

CLASS MEETS AT FACULTY CLUB AT 9:00 a.m.
(Class date, time, & place adjusted to accommodate extended IMH Faculty Meeting 2/28/08.)

Reiser, "Chapter 7: Medical Specialism and the Centralization of Medical Care," *Medicine and the Reign of Technology*, 144-157.

Lindsay Prior, "The Architecture of the Hospital: A Study of Spatial Organization and Medical Knowledge," *The British Journal of Sociology*, Vol. 39, No. 1. (1988), 86-113.

Jeanne Kisacky, "Restructuring Isolation: Hospital Architecture, Medicine, and Disease Prevention," *Bulletin of the History of Medicine*, 79.1(2005), 1-49.

Joel D. Howell, and *Technology and the Hospital: Transforming Patient Care in the Early Twentieth Century* (Baltimore: Johns Hopkins University Press, 1996), as follows:

- "Physicians, Patients, and Medical Technology," 1-29.
- "Science, Scientific Systems, and Surgery: Technology and the U.S. Hospital," 30-67.
- "Machines and Medicine: Lessons from the Early Twentieth Century," 227-249.

Week 10: TUESDAY, MARCH 4, 2008
PHARMACEUTICALS: Technological Products of Science, Medicine, and Industry

CLASS MEETS AT FACULTY CLUB AT 9:00 a.m.
(Class date, time, & place adjusted to accommodate
IMH Graduate Student Research Colloquium 3/06/08.)

Charles E. Rosenberg, "The Therapeutic Revolution: Medicine, Meaning, and Social Change in America," in Morris J. Vogel and Charles E. Rosenberg, eds., *The Therapeutic Revolution: Essays in the Social History of American Medicine* (Philadelphia: University of Pennsylvania Press, 1979), 3-25. Reprinted in Judith Walzer Leavitt and Ronald L. Numbers, eds., *Sickness and Health in America: Readings in the History of Medicine and Public Health*, Second Edition (Madison, WI: University of Wisconsin Press, 1985), 39-52.

Nancy Tomes, "The Great American Medicine Show Revisited," *Bulletin of the History of Medicine*, 79.2(2005): 627-663.

Nicolas Rasmussen, "The Drug Industry and Clinical Research in Interwar America: Three Types of Physician Collaborator," *Bulletin of the History of Medicine*, 79.1(2005), 50-80.

Chris Feudtner, "The Want of Control: Ideas, Innovations, and Ideals in the Modern Management of Diabetes Mellitus," *Bulletin of the History of Medicine*, 69.1(2005), 66-90.

Jeremy A. Greene, "Releasing the Flood Waters: Diuril and the Reshaping of Hypertension," *Bulletin of the History of Medicine*, 79.4(2005), 749-795.

Week 11: THURSDAY, MARCH 13, 2008
GENETIC TECHNOLOGIES: Ethnicity, Race, Commerce, and 'Science's Holy Grail'

Daniel J. Kevles, "Out of Eugenics: The Historical Politics of the Human Genome," in Daniel J. Kevles and Leroy Hood, eds. *The Code of Codes: Scientific and Social Issues in the Human Genome Project* (Cambridge, MA: Harvard University Press, 1992): 3-36.

Sally Smith Hughes, "Making Dollars Out of DNA: The First Major Patent in Biotechnology and the Commercialization of Molecular Biology, 1974-1980," *Isis* 92.3(2001): 541-575.

Keith Wailoo and Stephen Pemberton, *The Troubled Dream of Genetic Medicine: Ethnicity and Innovation in Tay-Sachs, Cystic Fibrosis, and Sickle Cell Disease* (Baltimore: Johns Hopkins University Press, 2006, as follows:

- "Introduction: Ethnic Symbols in Conflicted Times," 1-13.
- "Chapter 1, Eradicating a 'Jewish Gene': Promises and Pitfalls in the Fight against Tay-Sachs Disease," 14-60.
- "Chapter 2, Risky Business in White America: Gene Therapy and Other Ventures in the Treatment of Cystic Fibrosis," 61-115.
- "Chapter 3, A Perilous Lottery for the Black Family: Sickle Cells, Social Justice, and the New Therapeutic Gamble," 116-174.

Week 12: THURSDAY, MARCH 20, 2008
REPRODUCTIVE TECHNOLOGIES: Feminist Theory Meets Technological History

Keith Grint and Steve Woolgar, "On Some Failures of Nerve in Constructivist and Feminist Analyses of Technology," *Science, Technology, & Human Values*, Special Issue: Feminist and Constructivist Perspectives on New Technology, Vol. 20, No. 3, (1995), 286-310.

Kevles, "Looking through Women: The Development of Ultrasound and Mammography," *Naked to the Bone*, 228-260.

Ruth Schwartz Cowan, "Genetic Technology and Reproductive Choice: An Ethics for Autonomy," in Kevles and Hood, eds., *Code of Codes*, 244-263.

Suzanne White Junod and Lara Marks, "Women's Trials: The Approval of the First Oral Contraceptive Pill in the United States and Great Britain," *Journal of the History of Medicine and Allied Sciences* 57.2 (2002), 117-160.

Elizabeth Siegel Watkins, "'Doctor, Are You Trying to Kill Me?': Ambivalence about the Package Insert for Estrogen," *Bulletin of the History of Medicine* 76.1(2002), 84-104.

Week 13: THURSDAY, MARCH 27, 2008
COMPUTER TECHNOLOGY: Beyond Quantification and Automation

Reiser, "Chapter 10: Telecommunication, Automation, and Medical Practice," *Medicine and the Reign of Technology*, 196-226.

Joel D. Howell, "Technologies Transforming Health Care: X-Rays, Computers, and the Internet," in Lester D. Friedman, ed., *Cultural Sutures: Medicine and Media* (Durham and London: Duke University Press, 2004), 333-350.

Timothy Lenoir, "The Shape of Things to Come: Surgery in the Age of Medialization," in Friedman, ed., *Cultural Sutures*, 351-372.

Faith McClellan, "Medicine.com: The Internet and the Patient-Physician Relationship," in Friedman, ed., *Cultural Sutures*, 373-385.

Tod Chambers, "Virtual Disability: On the Internet, Nobody Knows You're Not a Sick Puppy," in Friedman, ed., *Cultural Sutures*, 386-398.

Week 14: THURSDAY, APRIL 3, 2008
QUESTIONING MEDICAL TECHNOLOGY, PART I: Evaluation and Efficacy

Reiser, *Medicine and the Reign of Technology*, as follows:

- "Chapter 8: The Shortcomings of Technology in Medical Decision-Making," 158-173.
- "Chapter 9: Selection and Evaluation of Evidence in Medicine," 174-195.

David S. Jones, "Visions of a Cure: Visualization, Clinical Trials, and Controversies in Cardiac Therapeutics, 1968-1998, *Isis*, Vol. 91, No. 3. (2000), 504-541.

David J. Rothman, "The Iron Lung," *Beginnings Count: The Technological Imperative in American Health Care* (New York: Oxford, 1997), 42-66.

James H. Maxwell, "The Iron Lung: Halfway Technology or Necessary Step?," *The Milbank Quarterly* 64 (1986): 3-29.

Lewis Thomas, "Response to James H. Maxwell's Essay, 'The Iron Lung'," *The Milbank Quarterly* 64 (1986): 30-33.

Week 15: THURSDAY, APRIL 10, 2008
QUESTIONING MEDICAL TECHNOLOGY, PART II: Rationing, Risk, and Justice

Rothman, "Rationing the Respirator," *Beginnings Count*, 112-131.

George J. Annas and Sherman Elias, "Thalidomide and the *Titanic*: Reconstructing the Technology Tragedies of the Twentieth Century," *American Journal of Public Health*, Vol. 89, No. 1 (1999), 98-101.

Diana Dutton, Thomas A. Preston, and Nancy E. Pfund, *Worse than the Disease: Pitfalls of Medical Progress* (Cambridge: Cambridge University Press, 1988), as follows:

- Thomas Preston, "The Artificial Heart," 91-126.
- Diana Dutton, "Swine Flu Vaccination," 127- 173.
- Dutton, "What is possible? Toward Medical Progress in the Public Interest," 350-381.

Ted Lockhart, "Technological Fixes for Moral Dilemmas," *Techné: Research in Philosophy and Technology* (e-Journal of the Society for Philosophy and Technology), 1.3-4(1996): 1-13. (Archived: scholar.lib.vt.edu/ejournals/SPT/v1n3n4/pdf/lockhart.pdf; last accessed December 22, 2007.)

Week 15: <u>EXTRA SESSION</u>: THURSDAY, APRIL 10, 2008
PAPER WORKSHOP: UTMB Library Starbucks
Meet in front of IMH Library for pick-up, 4:30 p.m.

What issues are you facing as you write your final paper for this course? What approaches to writing and organization have been working for you thus far – and which have not? Which materials from our course are you trying to integrate with your own research? During this session, which will be structured and conducted like a meeting of a peer writing group, students interact with the instructor and the rest of the seminar to discuss and receive feedback on their papers.

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*****ALERT!!!!*****
FINAL RESEARCH PAPER/JOURNAL ARTICLE DUE AT START OF CLASS
-- i.e. WEEK 16 --
ON APRIL 17, 2007!!!

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Week 16: THURSDAY, APRIL 17, 2008
REVIEW AND ASSESSMENT

*****ALERT!*****
6,000-word Final Research Paper/Journal Article due at the beginning of class in Week 16,
APRIL 17, 2008!!!
*****ALERT!*****

First Portion of Session: Each student will be asked to offer brief reflections on the process of completing the research papers that they have just submitted.

Second Portion of Session: The bulk of the session will consist of a seminar discussion about the following readings, which will allow us to reflect upon the materials read during the foregoing semester. Thus, please prepare the following for class:

'REVIEW AND ASSESSMENT' READING for APRIL 17, 2008 CLASS:

Harry M. Marks, "Medical Technologies: Social Contexts and Consequences," in W. F. Bynum and Roy Porter, eds., *Companion Encyclopedia of the History of Medicine, Volume 2* (London and New York: Routledge, 1993), 1592-1618.

Stanley Joel Reiser, "The Science of Diagnosis: Diagnostic Technology," in W. F. Bynum and Roy Porter, eds., *Companion Encyclopedia of the History of Medicine, Volume 2* (London and New York: Routledge, 1993), 801-825.

Emmanuel G. Mesthene, "On Understanding Change: The Harvard University Program on Technology and Society," *Technology and Culture*, Vol. 6, No. 2 (1965), 222-235.

Wiebe E. Bijker, "Do Not Despair: There Is Life after Constructivism," *Science, Technology, & Human Values*, Theme Issue: Technological Choices, Vol. 18, No. 1, (1993), 113-138.